APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
BRODA, SAMUEL

ART UNIT	PAPER NUMBER
2123	15

DATE MAILED: 09/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _10 July 2003_ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-20_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _16,17,19 and 20_ is/are allowed.

6)☒ Claim(s) _1-15 and 18_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _20 August 1999_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

DETAILED ACTION

1.   This communication is in response to Applicants' filing of both: (1) a <u>Preliminary</u>

<u>Amendment and Response to Final Office Action</u> dated 7 July 2003, and (2) a <u>Request for</u>

<u>Continued Examination</u> dated 10 July 2003. Claim 16 was amended and claims 19-20 were

added in the <u>Preliminary Amendment</u>; claims 1-20 are pending.

Specification

2.   The disclosure is objected to because of the following informalities:

     2.1   The Specification does not contain a section titled "<u>Cross-References to Related</u>

<u>Applications</u>" including the application information submitted in Applicants' Information

Disclosure Statement mailed on 11 November 1999. Correction is required.

     2.2   Pages 11-12 of the Specification contain incomplete citations to additional

applications incorporated by reference. Correction is required.

     2.3   Pages 13-16, 22, 24, and 26-28 contain pseudocode instructions having type size

that appears smaller than .21 cm (.08 inch) and spacing less than 1.5 lines. See 37 CFR

1.52(b)(2). Correction is required.

Claim Rejections - 35 U.S.C. § 101

3.   The following is a quotation of 35 U.S.C. 101:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3.1 Claims 9, 15, and 18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

3.2 Regarding claims 9, 15, and 18, claim 9 recites "A computer readable medium having software for performing the method of claim 1," claim 15 recites "A computer readable medium having software for performing the method of claim 10," and claim 18 recites "A computer readable medium having software for performing the method of claim 16."

These claims lack a positive recitation that what is claimed is a computer readable medium having executable computer code that when executed causes a computer to perform the steps described by the independent claim. As currently written, the claimed computer readable medium appears to consist of non-functional descriptive material; see MPEP Section 2106, subsection IV.B.1(a).

Claim Rejections - 35 U.S.C. § 112, First Paragraph

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4.1   Claims 1-15 are rejected under 35 U.S.C. 112, first paragraph, as containing

subject matter which was not described in the specification in such a way as to enable one skilled

in the art to which it pertains, or with which it is most nearly connected, to make and/or use the

invention.

4.2   Regarding independent claims 1 and 10, claim 1 includes the limitation

"determining sets of mutually exclusive operations from the specified processor operations based

on the desired instruction level parallelism" and claim 10 includes the limitation "from an input

specification defining a set of specified processor operations and instruction level parallelism

among the specified operations, determining sets of mutually exclusive operations."

The Specification does not appear to teach how one reasonably skilled in the art would

determine the sets of mutually exclusive operations; the Specification instead appears to describe

an "input specification 34" in which the sets of mutually exclusive operations have already been

determined.

According to the Specification at page 17 lines 23-30 (in-part):

> . . . The datapath synthesizer 20 (Fig.1) processes an input specification
> like the one graphically depicted in Fig. 2 (e.g., Item 34) to create a physical
> datapath representation 38 . . . As shown in this example, **the input specification**
> **34 provides the desired operation groups 35, and specifies the instruction**
> **level parallelism among these groups as "exclusion groups"** . . .
> [Emphasis added.]

As shown in Fig. 2, the operation groups 35 and exclusion group 36 are encapsulated within input specification 34.

The remainder of the Specification does not appear to teach how input specification 34 is generated; for example, the construction of input specification 34 is not shown on any flowchart and input specification 34 does not appear in the schematic diagrams of Figs. 1 or 3.

Taken as a whole, only with undue experimentation could one reasonably skilled in the art make and/or use the invention, because of the omissions in the subject matter described in the Specification.

4.3   Claims 2-9 and 11-15 are each dependent on one of independent claims 1 and 8 and are rejected using the same analysis.

Indication of Allowable Subject Matter

5.1   Claim 18 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 101, set forth in this Office action.

5.2   Claims 16-17 and 19-20 are allowed.

Applicants' Arguments

6.   Applicants make the following arguments:

6.1   Applicants argue at page 3 of the Preliminary Amendment that the prior rejections made under Section 102 using the reference Dey et al are inapplicable to claims 1-15 because:

Dey et al. does not anticipate or render obvious a method for the automatic

design of a processor datapath including "determining sets of mutually exclusive

operations from the specified processor operations based on the desired

instruction level parallelism" as is recited in Applicants' Claim 1.

6.2   Applicants argue at page 4 of the Preliminary Amendment that the prior rejections

made under Section 102 using the reference Dey et al are inapplicable to claims 16-18 because:

Dey et al. does not anticipate or render obvious a method for the automatic

design of a processor datapath including determining how to share a register port

for two or more functional unit ports based on the specification of instruction

level parallelism among the operations as is recited in Claim 16.

Examiner's Reply

7.   In response to Applicants' arguments, the Examiner has removed the rejections under

Section 102.

Conclusion

8.   The prior art made of record and not relied upon is considered pertinent to Applicants'

disclosure. Reference to Li et al, "An Algorithm to Determine Mutually Exclusive Operations In

Behavioral Descriptions," IEEE Proceedings of Design, Automation and Test in Europe, pp.

457-463 (February 1998), is cited as teaching an algorithm to identify the largest set of mutually

exclusive operation pairs in a behavioral description.

9.   Any inquiry concerning this communication or earlier communications from the

Examiner should be directed to Samuel Broda, whose telephone number is (703) 305-1026. The

Examiner can normally be reached on Mondays through Fridays from 8:00 AM – 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's

supervisor, Kevin Teska, can be reached at (703) 305-9704. The fax phone number for the

organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the group receptionist, whose telephone number is (703) 305-3900.

SAMUEL BRODA, ESQ.
PRIMARY EXAMINER